

#_ Core Shell

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(Based on slides from Daniel Kessler, Douglas Wong, Sahil Hasan, Stefan Kuklinsky)

Logistics

- Lab 3 Released @ decal.ocf.io
- Ask questions in **#decal-general** on the OCF chat network.
 - ocf.io/slack
 - ocf.io/discord
 - ocf.io/irc
 - ocf.io/matrix

Today

- SSH
- Files, Pipes, and Redirection
- Tmux
- Vim

Shell

```
ldw@supernova:~$ █
```

Why use the shell?

- Can make you more productive
- Easier to automate - do work without lifting a finger!
- Sometimes necessary

Is it unethical for me to not tell my employer I've automated my job?



741



248

I currently work on a legacy system for a company. The system is really old - and although I was hired as a programmer, my job is pretty much glorified data entry. To summarise, I get a bunch of requirements, which is literally just lots of data for each month on spreadsheets and I have to configure the system to make it work, which is basically just writing a whole bunch of SQL scripts.

It's not quite as simple as that, because whoever wrote the system originally really wrote it backwards, and in fact, the analysts who create the spreadsheets actually spend a fair bit of time verifying my work because the process is so tedious that it's easy to make a mistake.

As you can guess, it is pretty much the most boring job ever. However, it's a full time job with decent pay, and I work remotely so I can stay home with my son.

So I've been doing it for about 18 months and in that time, I've basically figured out all the traps to the point where I've actually written a program which for the past 6 months has been just doing the whole thing for me. So what used to take the last guy like a month, now takes maybe 10 minutes to clean the spreadsheet and run it through the program.

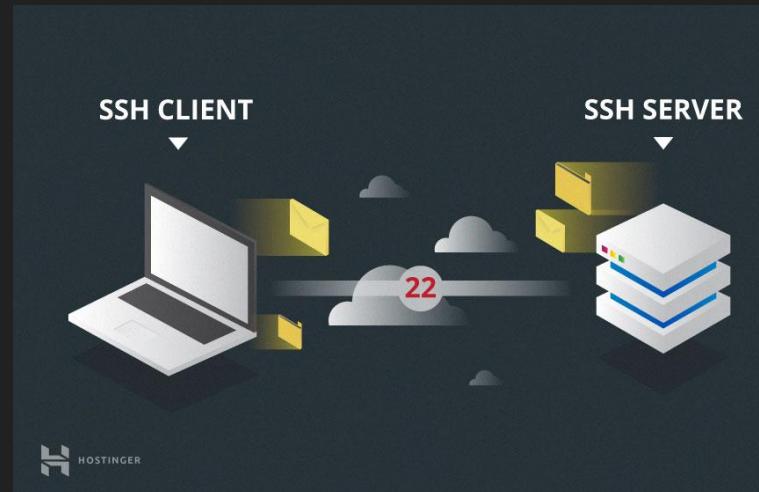
<https://workplace.stackexchange.com/q/93696>

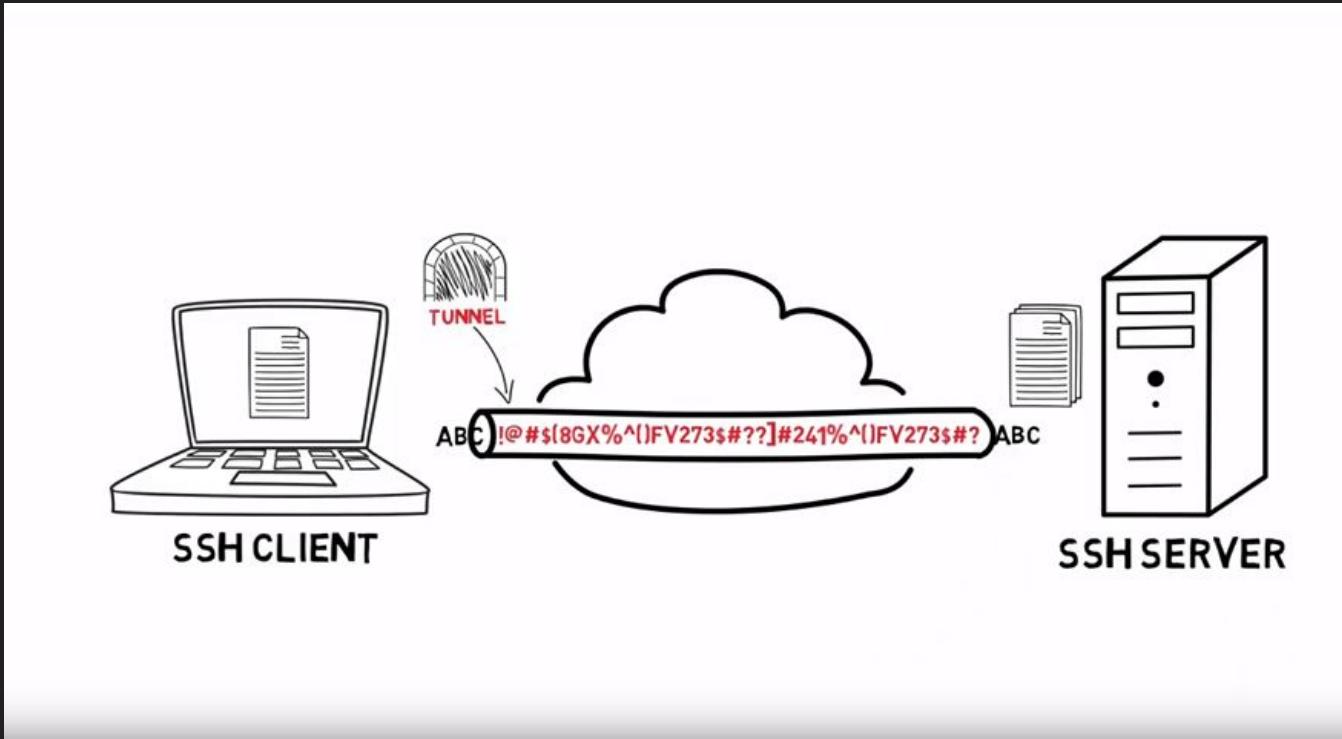
Common Shells

- Bash (Bourne-again shell)
- Zsh (Z shell)
- Bunch of other less common ones (dash, csh, tcsh, **fish**, etc.)

SSH (Secure Shell)

- Lets you log in to a remote computer
- `ssh <user>@<remote>`





Basic File management

- cp [source] [target]
- mv [source] [target]

man [command]

Moving around the filesystem

- Two ways of referencing a file: absolute and relative
 - `/home/t/ta/tanx/file`
 - `~/file`
 - `.`
 - `..`
- Absolute paths always start with `/`

Efficient shell

- Replaying commands: !!
- Argument substitution: !:1
 - Grab last argument: !\$

MAKE ME A SANDWICH.

WHAT? MAKE
IT YOURSELF.

SUDO MAKE ME
A SANDWICH.

OKAY.



Demo



demo — -bash — 56x24

```
[tanx:demo Tanx$ echo "Make me a sandwich"
Make me a sandwich
[tanx:demo Tanx$ sudo !!
sudo echo "Make me a sandwich"
Make me a sandwich
[tanx:demo Tanx$ touch file.txt
[tanx:demo Tanx$ mv !:1 bettername.txt
mv file.txt bettername.txt
[tanx:demo Tanx$ ls
bettername.txt
tanx:demo Tanx$
```

Pipe

- | (called a pipe)
- Utility for chaining commands together

cat people_names

```
cat people_names
```

```
Alicia Fuentes  
Jo-Ting Losev  
Elena Edmonds  
Naydene Cabral  
Dato Rosengren  
Fernanda Serrano  
Emiliano Wenk  
Larry Lapin  
Jakub Gondos  
Derek Kazanin  
...
```

Standard output (your screen)

cat people_names | grep Anna

```
cat people_names
```

Alicia Fuentes
Jo-Ting Losev
Elena Edmonds
Naydene Cabral
Dato Rosengren
Fernanda Serrano
Emiliano Wenk
Larry Lapin
Jakub Gondos
Derek Kazanin
...

```
grep Anna
```

Anna Choi
Anna Menkov
Annabel Sun
Anna Hosking
Anna Holzdeppe
Anna Rosario
Anna Jaskolka
Anna Prucksakorn
Anna Tomic
Annari Simmonds
...

Standard output
(your screen)

Redirect

- `stdin, stdout`
- `>`
- `<`

cat people_names > test.txt

```
cat people_names
```

```
Alicia Fuentes  
Jo-Ting Losev  
Elena Edmonds  
Naydene Cabral  
Dato Rosengren  
Fernanda Serrano  
Emiliano Wenk  
Larry Lapin  
Jakub Gondos  
Derek Kazanin  
...
```

The file test.txt

grep Anna < people_names > output.txt

The file
people_names

Alicia Fuentes
Jo-Ting Losev
Elena Edmonds
Naydene Cabral
Dato Rosengren
Fernanda Serrano
Emiliano Wenk
Larry Lapin
Jakub Gondos
Derek Kazanin
...

grep Anna

Anna Choi
Anna Menkov
Annabel Sun
Anna Hosking
Anna Holzdeppe
Anna Rosario
Anna Jaskolka
Anna Prucksakorn
Anna Tomic
Annari Simmonds
...

The file output.txt

Editors

A screenshot of a terminal window titled "VIM - Vi IMproved". The window displays the following text:

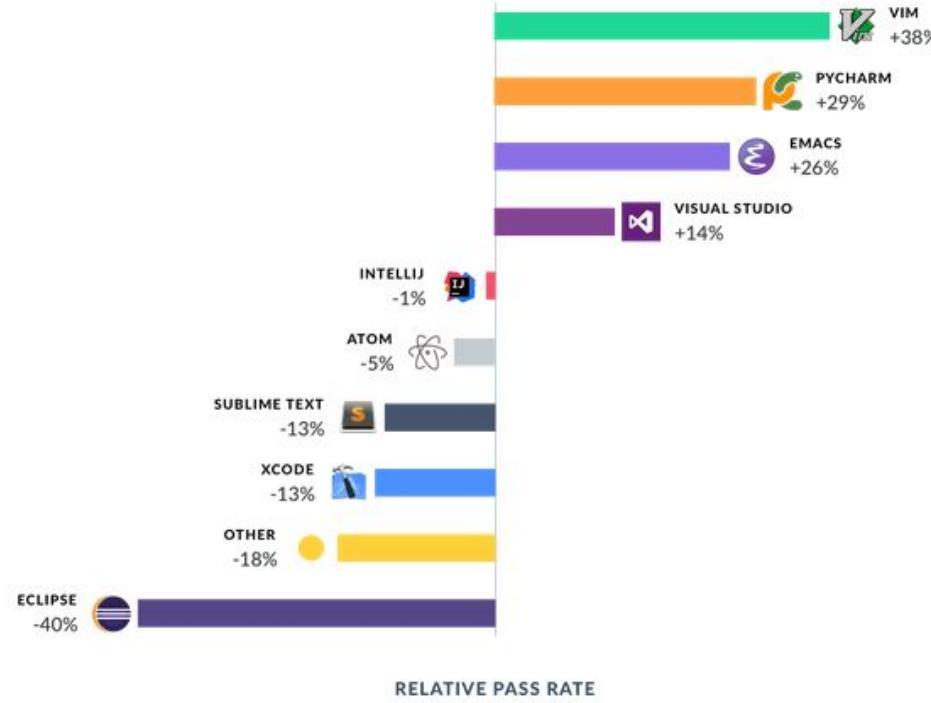
```
1 [No Name] X
1 ~
~ VIM - Vi IMproved
~ version 8.0.550
~ by Bram Moolenaar et al.
~ Modified by pkg-vim-maintainers@lists.alioth.debian.org
~ Vim is open source and freely distributable
~ Help poor children in Uganda!
~ type :help iccf<Enter> for information
~ type :q<Enter> to exit
~ type :help<Enter> or <F1> for on-line help
~ type :help version8<Enter> for version info
~
```

The status bar at the bottom shows "NORMAL" and "[No Name]" on the left, "100%" and "0:1" on the right, and a vertical scroll bar on the far right.

Common Editors

- Vim
- Emacs
- Nano (easy to use)

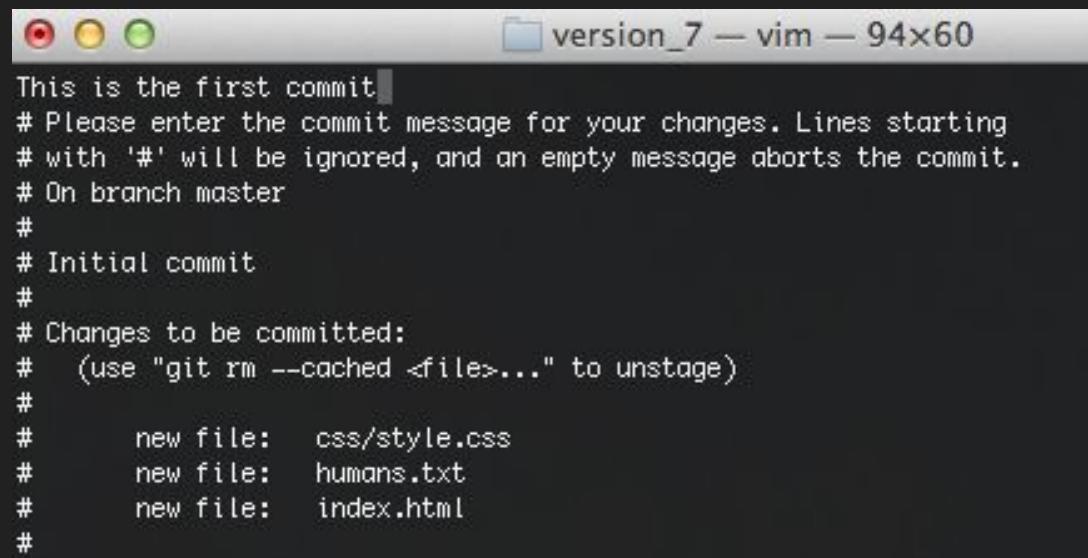
Triplebyte Technical Interview Pass Rate by Editor



<https://triplebyte.com/blog/technical-interview-performance-by-editor-os-language>

Why vim?

- Available everywhere
- Productivity!



A screenshot of a terminal window titled "version_7 — vim — 94x60". The window shows a commit message being edited in Vim. The message starts with "This is the first commit" and includes instructions for entering the commit message, ignoring '#' lines, and aborting if empty. It then lists new files added: "new file: css/style.css", "new file: humans.txt", and "new file: index.html".

```
This is the first commit
# Please enter the commit message for your changes. Lines starting
# with '#' will be ignored, and an empty message aborts the commit.
# On branch master
#
# Initial commit
#
# Changes to be committed:
#   (use "git rm --cached <file>..." to unstage)
#
#       new file:   css/style.css
#       new file:   humans.txt
#       new file:   index.html
#
```

Basics of vim

- Moving around
- Yank and paste
- Panes

Tmux (Terminal Multiplexer)

- One terminal to potentially many
- Add windows to your terminal
- Save your sessions
- Screensharing, but better

Demo